

PATENTS

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

<b>Applicant:</b>	Harold S. Stone, et al.	<b>Examiner:</b>	Unassigned
<b>Serial No:</b>	To be assigned	<b>Art Unit:</b>	Unassigned
<b>Filed:</b>	Herewith	<b>Docket:</b>	14406 (NECI 1100)
<b>For:</b>	METHOD FOR BLIND CROSS-SPECTRAL IMAGE REGISTRATION	<b>Dated:</b>	March 30, 2001



Assistant Commissioner for Patents  
United States Patent and Trademark Office  
Washington, D.C. 20231

**INFORMATION DISCLOSURE STATEMENT**

Sir:

In accordance with 37 C.F.R. §§ 1.97 and 1.98, it is requested that the following references, which are also listed on the attached Form PTO-1449, be made of record in the above-identified case.

1. Townshend, J.R.G., et al., "The Impact of Misregistration on Change Detection", IEEE Trans. On Geoscience and Remote Sensing, Vol. 30, No. 5, pp. 1054-1060, September 1992;
2. Dai, X., et al., "Automated image registration for change detection From Landsat Thematic Mapper imagery", in 1996 IGARSS, Remote Sensing – Remote Sensing for a Sustainable Future, May 1996, Vol. 3, pp. 1348-1350;

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I hereby certify that this correspondence is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents and Trademarks, Washington, D.C. 20231.

Dated: March 30, 2001

A handwritten signature in cursive script that reads "Janet Grossman".  
Janet Grossman

3. Dai, X, et al., "Development of a Feature-based Approach to Automated Image Registration for Multitemporal and Multisensor Remotely Sensed Imagery", in 1997 IGARSS, Remote Sensing – A Scientific Vision for Sustainable Development, August 1997, Vol. 1, pp. 243-245;
4. Dai, X., et al., "A Feature-Based Image Registration Algorithm Using Improved Chain-Code Representation Combined with Invariant Moments" IEEE Transactions of Geoscience and Remote Sensing, Vol. 37, No. 5, pp. 2351-2362, September 1999;
5. Flusser, J., et al., "A Moment-Based Approach to Registration of Images with Affine Geometric Distortion", IEEE Transactions on Geoscience and Remote Sensing, Vol. 32, No. 2, pp. 382-387, March 1994;
6. Govindu, V., et al., "Using Geometric Properties for Correspondence-less Image Alignment", in Proc. of 14<sup>th</sup> International Conference on Pattern Recognition, Vol. 1, pp. 37-41, August 1998;
7. Govindu, V., et al., "Alignment Using Distributions on Local Geometric Properties", IEEE Trans. On Pattern Analysis and Machine Intelligence, Vol. 21, No. 10, pp. 1031-1043, October 1999;
8. Hsu, L.-Y, et al., "Automated Registration of Brain Images Using Edge and Surface Features, IEEE Engineering in Medicine and Biology, Vol. 18, No. 6, pp. 40-47, 1990;
9. Kumar, R., et al., "Frameless Registration of MR and CT 3D Volumetric Data Sets", in Proceedings of the Second IEEE Workshop on Applications of Computer Vision, pp. 240-248, December 1994;
10. Li, H., et al., "A Contour-Based Approach to Multisensor Image Registration", IEEE Trans. On Image Processing, Vol. 4, No. 3, pp. 320-334, 1995;
11. Moshfeghi, M., "Multimodality Image Registration Techniques in Medicine", in Proceedings of 11<sup>th</sup> IEEE Conference on Engineering in Medicine and Biology, Y. Kim and F.A. Spelman, Eds., Vol. 6, pp. 2007-2008, November 1989;
12. Ton, J., et al., "Registering Landsat Images by Point Matching", IEEE Transactions on Geoscience and Remote Sensing, Vol. 27, No. 5, pp. 642-651, September 1989;
13. Viola, P., et al., "Alignment by Maximization of Mutual Information", in Proc. of 5<sup>th</sup> International Conference on Computer Vision, pp. 16-23, June 1995;
14. Maes, F., et al., "Multimodality Image Registration by Maximization of Mutual Information", IEEE Transaction on Geoscience and Remote Sensing, Vol. 38, No. 3, pp. 1476-1478, May 2000;

15. Thevanaz, P., et al., "A Pyramid Approach to Subpixel Registration Based on Intensity", IEEE Transactions on Image Processing, Vol. 7, pp. 27-41, January 1998;
16. Thevanaz, P., et al., "A Pyramid Approach to Sub-Pixel Image Fusion Based on Mutual Information", in Proc. of 1996 IEEE International Conference on Image Processing, Vol. 1, pp. 265-268, September 1996;
17. Stone, H.S., "Progressive Wavelet Correlation Using Fourier Methods", IEEE Transactions on Signal Processing, Vol. 47, pp. 97-107, January 1999;
18. Chandra, D.V.S., "Fast Registration of Multispectral Images Using Orthogonal Transforms", in Proc. of 35<sup>th</sup> Midwest Symposium on Circuits and Systems, Vol. 1, pp. 703-706, August 1992;
19. Irani, M., et al., "Robust Multi-Sensor Images Alignment", in Proc. of the 1998 International Conference on Computer Vision, pp. 959-966, January 1998;
20. Simoncelli, E.P., et al., "Shiftable Multiscale Transforms", IEEE Transactions on Information Theory, Vol. 38, No. 2, pp. 587-607, March 1992;
21. Blahut, R.E., "Fast Algorithms for Digital Signal Processing", Addison-Wesley, pp. 66-69 and 240-246, 1985;
22. Canny, J., "A Computational Approach to Edge Detection", IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 8, pp. 679-698, 1986;
23. Chen, H.-M, et al., "A Pyramid Approach for Multimodality Image Registration Based on Mutual Information", in Proc. of the Third International Conference on Information Fusion, Vol. 1, pp. MoD3 9-15, July 2000.

Applicants are submitting copies of the above-cited references.

Inasmuch as this Information Disclosure Statement is being submitted in accordance with the schedule set out in 37 C.F.R. § 1.97(b), no petition, certification or fee is required.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark J. Cohen". The signature is fluid and cursive, with the first name "Mark" and last name "Cohen" clearly distinguishable.

Mark J. Cohen

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